

**Appendix D**  
**Erosion Control, Sedimentation And Restoration**  
**Plan Guidelines for the**  
**Cosumnes Power Plant Project**

---

**SACRAMENTO MUNICIPAL UTILITY  
PIPELINE CONSTRUCTION  
FOR COSUMNES POWER PLANT**

**EROSION CONTROL, SEDIMENTATION AND  
RESTORATION PLAN GUIDELINES**

**(rev 1.2 5/5/03 )**

## TABLE OF CONTENTS

1. INTRODUCTION .....	1
2. TEMPORARY EROSION AND SEDIMENTATION CONTROL .....	1
A. GENERAL.....	1
B. FUGITIVE DUST CONTROL.....	2
C. TOPSOIL SEPARATION.....	3
D. SEDIMENT BARRIERS .....	4
1. SILT FENCES .....	4
2. STRAW BALE BARRIERS .....	5
3. STORM DRAINS .....	6
E. CULVERTS.....	7
F. STREAM CROSSINGS.....	7
1. GENERAL.....	7
2. TIMING.....	7
3. CLEARING AND GRUBBING.....	8
4. MINOR PERENNIAL STREAMS.....	8
5. MAJOR PERENNIAL STREAMS.....	9
G. TRENCH DEWATERING.....	9
H. HYDROSTATIC TEST WATER.....	11
I. CLEANUP.....	11
J. EROSION CONTROL MAINTENANCE DURING STORM EVENTS.....	11
3. PERMANENT EROSION CONTROL AND RESTORATION .....	12
A. GENERAL.....	12
B. AGRICULTURAL AND RANGE LANDS .....	12
1. SEEDBED PREPARATION .....	13
2. SEEDING METHOD.....	13
3. DRY BROADCASTING SEEDING .....	13
4. HYDROSEEDING.....	13
5. FERTILIZATION AND SOIL AMENDMENTS .....	14
6. SURFACE MULCHING.....	14
7. TIMING.....	14
8. REMEDIAL SEEDING .....	15
C. SUBURBAN AND INDUSTRIAL LANDS .....	15
D. WETLAND AND RIPARIAN PLANTING .....	15
1. RIPARIAN VEGETATION .....	15
2. PLANTING MATERIALS .....	16
3. PLANTING METHODS .....	16
4. IRRIGATION .....	18
5. FERTILIZATION AND SOIL AMENDMENTS .....	18
6. PROTECTION DEVICES.....	18
7. EROSION CONTROL FABRIC.....	18
8. TIMING.....	18
9. MONITORING AND MAINTENANCE .....	19
10. WEED CONTROL .....	19
11. PLANT PROTECTION .....	19
12. REPLACEMENT PLANTING.....	20

4. CONTRACTOR SUBMITTALS .....	20
--------------------------------	----

## **LIST OF TABLES**

TABLE 1. Erosion Control Seed Mix .....	23
---	----

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **1. INTRODUCTION**

This document provides a detailed plan for mitigation and monitoring of potential impacts from erosion and sedimentation. It is designed to satisfy the requirements of both the California Energy Commission Conditions of Certification, the California Department of Fish and Game Streambed Alteration Agreement, and, in large part, the Regional Water Quality Control Board Storm Water Pollution Prevention Plan (SWPPP). The Plan is organized to address both temporary and permanent erosion and sediment control requirements.

## **2. TEMPORARY EROSION AND SEDIMENTATION CONTROL**

### **A. GENERAL**

Temporary erosion control shall consist of taking necessary measures to minimize erosion and resulting transport of sediment and silt from graded or disturbed areas into natural or man-made drainage facilities downstream and outside the limits of earthwork, and to control runoff and sediment downslope from all disturbed areas. Contractor shall furnish all materials and shall perform all measures for all temporary sediment and erosion control facilities as specified herein to prevent erosion and water pollution.

No vehicular travel or equipment operation shall take place during times of high soil moisture conditions when the surface cannot support such equipment or vehicles without causing excessive damage to vegetation and/or surface soils. A District Environmental Monitor or Construction Inspector shall notify Contractor when such conditions exist.

In preparation for the rainy season (October 1 to April 30), Contractor shall stockpile materials for temporary erosion control beginning September 1 at all sensitive locations as defined in the SWPPP. A list of materials that will be stockpiled by Contractor shall be submitted to District by August 15. All temporary erosion control measures shall be installed by October 1. Contractor shall install measures earlier if a storm is forecasted. During the dry season (May 1 to September 30), contractor shall also install all temporary erosion control measures necessary to prevent erosion and resulting transport of sediment and silt immediately following clearing and grubbing operations in the following locations:

- At all wet ephemeral streams, minor perennial streams and major perennial streams as defined in the California Department of Fish and Game Streambed Alteration Agreement
- At all locations indicated on the Drawings
- At any additional locations where sediment control is required by Contractor's SWPPP

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

Temporary erosion control measures shall be in accordance with this plan as well as the Department of Fish and Game Agreement Regarding Proposed Stream Alteration Notification and Contractor's SWPPP. Contractor shall be solely responsible for all damages, fines or mitigation requirements if erosion and sediment control devices are not installed effectively and in accordance with the Department of Fish and Game Streambed Alteration Agreement, Contractor's SWPPP and this plan. Contractor shall also be responsible for delays and damages to other Contractors and/or the projects resulting from action taken by agencies because Contractor did not install erosion and sediment control devices per this plan, the Department of Fish and Game Streambed Alteration Agreement and Contractor's SWPPP. Contractor shall be responsible for removing and properly disposing of temporary erosion control facilities when permanent re-vegetation measure have met the required performance standards as defined in this document.

## **B. FUGITIVE DUST CONTROL**

Contractor shall disturb no more than the minimum amount of earth required for the construction to occur. To minimize fugitive dust, Contractor shall water the right-of-way, Contractor's storage yards, staging areas, and access roads at least twice a day so that they are visibly wet, or more frequently as required by a District Environmental Monitor or Construction Inspector, to provide adequate dust control.

Contractor shall cover haul trucks containing soil to minimize fugitive dust. Speeds for all vehicles must be controlled while on dirt access roads and the right-of-way. The maximum speed limit on unpaved access roads shall be as requested by property owner on private roads, and as determined by the county on public roads. The speed limit on the project site shall be kept below ten (10) miles per hour, unless otherwise restricted. Contractor shall post the construction site speed limit on the right-of-way at all points where access roads intersect the right-of-way. Contractor shall maintain speed limit signs throughout construction. Signs shall be a minimum of 8.5 inches by 11 inches and shall be laminated. Signs shall be posted four (4) feet above ground level. Signs shall not be blocked.

District Environmental Monitor or District Inspector shall direct Contractor to reduce speeds to five (5) miles per hour in the following situations:

- When dust conditions pose potential safety problems near roads and highways

If high wind conditions (greater than thirty-five (35) miles per hour) persist in sensitive areas for more than two (2) days, Contractor shall temporarily post five (5) miles per hour speed limit signs in areas as described above until wind subsides. If dust problems become significant and Contractor's watering of the construction area is insufficient to reduce fugitive dust, District environmental Monitor or District Inspector shall require a temporary stoppage of work in sensitive areas until either the frequency of truck watering is increased or other measures are taken by Contractor to reduce fugitive dust. District Environmental Monitor or District Inspector shall direct Contractor to water spoil piles to

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

ensure that upon drying an outside crust is formed which shall minimize wind erosion. Contractor shall cover spoil piles with plastic sheeting or jute netting with a maximum \_ inch mesh opening as an alternative to prevent wind erosion. Excavated and graded spoil areas, where it is anticipated that active construction will cease for more than 15 days, shall be treated by Contractor with a dust suppressant compound (such as magnesium chloride) as approved by District. Contractor shall cover topsoil piles in lieu of watering to avoid the potential for prematurely germinating seeds in the topsoil pile.

At all roadway crossings and access points where necessary, Contractor shall use any of the following:

- 50 foot-long crushed stone stabilized entrances and exits
- Hand sweeping, hand shoveling or sweeping or vacuuming machines
- Culvert installation
- Matting and other forms of rutting protection depending on local permits

If crushed stone access pads are used, a synthetic fiber shall be placed beneath to prevent mixing of topsoil and crushed stone. Contractor shall remove all sediment, dirt, dust and mud deposited on paved roadways at the end of each work day, or as often as necessary to keep roadways clear. When muddy conditions exist, all truck tires shall be sprayed clean of dirt prior to entering the public roadway in a designated area to contain sediment. (Care should be taken to prevent wash water from draining into sensitive wetlands). Contractor shall be responsible for spraying Contractor's and District' vehicles. Sediment that may pose a hazard to vehicle traffic on the roadway shall be removed immediately.

## **C. TOPSOIL SEPARATION**

The construction area is delineated on project figures and flagged in the field. It is the contractor's responsibility to remove as little soil as possible and to restore and reseed areas that will not be used for future construction. For the final restoration to be successful, a minimum of six (6) inches of topsoil shall be stripped from the project site for use in later restoration. Topsoil shall be distinctly segregated from other soils that are removed during grading and trenching operations. The topsoil shall remain stockpiled and undisturbed during all phases of pipeline construction. No drains or drainages shall be blocked by topsoil storage. In areas where the stockpiled topsoil is subject to wind erosion, the topsoil shall be either covered with plastic or jute netting with \_ inch maximum netting openings to protect the topsoil from wind erosion<sup>1</sup>. Topsoil shall not be used as padding for the pipe. The right-of-way shall be restored as close as possible to pre-construction contours and the topsoil shall be evenly distributed back on top.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **D. SEDIMENT BARRIERS**

Due to the generally gentle slope of the project site and laydown areas, and the stability of the soils, the potential for water to carry soil off the right-of-way is low. However, during heavy rainfall soil could potentially run off of stockpiled soils and through steep portions of ephemeral swales. Topsoil and spoil piles near roads, roadside ditches, streams or other sensitive resources shall be protected by sediment barriers or covered with plastic during the rainy season (October 1 to April 30) and when storms are forecasted. Contractor shall be responsible for contacting District Weather Line at (916) 646-2000 daily during the rainy season (October 1 to April 30) and May 1 to September 30 to obtain the national weather service report. The types of sediment barriers that shall be used by Contractor shall include, silt fences, staked straw bales, gravel bag berms, or fiber rolls as appropriate to the location. These structures shall be used to reduce the velocity and to filter out waterborne sediment, replacing the natural filtration effect of vegetation cover.

### **1. Silt Fences**

Silt fences shall be made of a filter fabric that has been entrenched and attached to supporting poles (Figure 2, Silt Fence). The filter fabric shall be a permeable type material that has been approved by the District and is specifically designed to control sediment for a year or more under normal conditions. Commercial filter fabrics, such as "Mirafi 100X" Sediment Control fabric by the Celanese Fibers Marketing Company or approved equal are acceptable for use. Standard burlap fabric is unacceptable. All areas disturbed by Contractor having a drainage pattern, which would allow sediment to enter waterways shall be fenced with silt fencing. Silt fence installations shall include, the following locations:

- At the base of slopes adjacent to roadways where the vegetative cover has been disturbed
- Along the perimeter of the working area nearest bodies of water, paved roads or roadside ditches that parallel the right-of-way
- Below the toe of a cleared slope
- Along streams and channels near the construction zone
- Around temporary spoil areas near streams and ephemeral swales to prevent spoil material from flowing off the construction site or into the stream zone

Contractor maintenance requirements for silt fences shall include:

- Inspections weekly during the dry season (May 1 to September 30)



# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

- Inspections during and immediately after each rainfall
- Repair wherever silt fence is damaged
- Removal of the sediment when it reaches 1/3 the height of the silt fence

## **2. Straw Bale Barriers**

Straw bale barriers shall consist of straw bales placed end to end, with no gaps, along a level contour in a shallow trench and staked to hold them in place. Straw bale barriers shall be placed to detain runoff, creating a pond behind the barrier where sedimentation occurs (Figure 3, Straw Bale Barriers). Suitable applications for straw bale barriers shall include the following:

- Along the edge of the working area
- Along streams and channels near the construction zone
- Across swales with small catchments
- Around temporary spoil areas
- Below small cleared areas
- Around storm drain inlets

Contractor maintenance requirements for straw bale barriers shall include:

- Inspections weekly during the dry season (May 1 to September 30)
- Inspections during and immediately after each rain
- Replacement of bales that have decomposed or whose bindings have broken
- Removal of sediment behind the barrier when it reaches a depth of six (6) inches

Based upon the project drawings, site evaluations and regulatory requirements, Contractor shall be responsible for determining the quantity and locations of sediment barriers to prevent sediment from entering natural waterways or flowing along the construction right-of-way. These structures shall be located so as not to hinder Contractor's construction operations. Structures that must be moved during the course of the day's construction shall be properly reinstalled at the close of the same day.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **3. Storm Drains**

Contractor shall prevent sediment from entering storm drain systems before the upslope drainage area is stabilized, or where construction is adjacent to an existing storm drain. Site specific inlet control measures shall be installed to prevent sediment from entering the system at inlets. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Generally, grates and spaces around all inlets shall be sealed to prevent seepage of sediment. Water flows shall not be blocked.

For pipeline construction in or adjacent to streets during the rainy season and when storms are forecasted, storm drains shall be protected against muddy runoff with site-specific measures. Measures shall include filter fabric fence (Figure 4, Filter Fabric Fence Drop Inlet Filter), block and grave filter (Figure 5, Block and Gravel Filter at Drop Inlet), gravel and wire mesh filters (Figure 6, Gravel and Wire Mesh Filter for Drop Inlet and Figure 7, Gravel and Wire Mesh Filter for Curb Inlet), straw bales and sandbag barriers. Every storm drain inlet receiving sediment-laden runoff shall be protected either by covering the inlet or promoting sedimentation upstream of the inlet. The previously named types of inlet protection measures are presented below, however, other site-specific methods that perform the same task exist and may be used if approved by District Environmental Monitor or Construction Inspector:

- Filter Fabric Fence: Appropriate for drainage basins less than one acre with less than a five (5) percent slope
- Block and Gravel Filter: Appropriate for flows greater than 0.5 cubic feet per second
- Gravel and Wire Mesh Filter: Used on curb or drop inlets where construction equipment may drive over the inlet
- Sand Bag Barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets
- Straw Bales: Used in street gutters at drop inlets to pond water allowing suspended sediments to settle out and the water to filter through

Contractor maintenance for these protection devices shall include:

- Inspections weekly during the dry season (May 1 to September 30)
- Inspections during and immediately after each rain

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

- Replacement of clogged filter fabric or stone filters immediately
- Removal of sediment when depth exceeds half the height of the filter
- Replacement of straw bales moved by neighborhood children and replacement of straw bales that have decomposed or whose bindings have broken

## **E. CULVERTS**

Culverts shall be installed to provide drainage across access roads and the right-of-way, or to provide drainage to streambeds at temporary stream crossings that would be needed for construction equipment. Temporary diversion structures used during culvert installation to direct water away from the work area shall be removed and the ground stabilized after culvert installation is complete. Temporary culverts shall be removed and the land and drainage channels restored to original contours.

## **F. STREAM CROSSINGS**

### **1. General**

Drainages that will be crossed using the open cut method have been classified into three different categories for the purpose of erosion and sedimentation control requirements.

- Ephemeral streams flow intermittently and are expected to be dry during the time of construction.
- Minor perennial streams have a low flow channel that is less than twenty (20) feet wide and three (3) feet average depth as defined in the California Department of Fish Streambed Alteration Agreement.
- Major perennial streams have a low flow channel greater than twenty (20) feet wide or greater than three (3) feet average depth as defined in the California Department of Fish and Game Streambed Alteration Agreement.

Refer to the California Department of Fish and Game Streambed Alteration Agreement (Technical Condition – Part 4 Permits) for requirements and a listing of streams crossed by the project.

### **2. Timing**

In order to minimize project impacts to water resources, construction through all streams and drainages shall be confined to the period of May 1 to October 31, except in designated giant garter snakes (*Thamnophis gigas*) locations. Giant garter snake is

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

a federally listed threatened species. At GGS locations, the period of construction work shall be between May 1 through October 1. This condition does not apply to bored or directionally drilled crossings. Contractor shall ensure that all stream crossings are completed in a timely manner. If construction through streams cannot be completed between May 1 through October 31, Contractor shall request, through District, an extension from the California Department of Fish and Game. No culverts across ephemeral streams shall be left in place without culverts beyond October 1 without CDFG approval. Any deviation to the following crossing or water diversion methods shall require prior approval of the California Department of Fish and Game. Contractor shall submit requests for time extensions of the work period to District at least 21 days before the above dates are reached. The Department of Fish and Game will respond to requests within 15 days.

### **3. Clearing and Grubbing**

Preserving existing vegetation and leaving root systems intact are two of the most important measures that can be implemented to prevent erosion at stream crossings. Many riparian and wetland plant species will re-sprout from roots, thus enhancing the restoration effort. Consequently, the clearing of streamside vegetation at all streams shall be limited to the minimum necessary to construct the crossing. Cutting or removing vegetation on the banks or outer levees of the Cosumnes River is prohibited. Vegetation that must be removed shall be pruned down to near ground level by hand rather than grubbing. Root systems shall be left intact except over the trench. In order to leave a ten (10) foot vegetated buffer at stream crossings, clearing and grading of stream banks shall be delayed until just before in-stream construction is scheduled to begin. If vegetation is disturbed within these limits, temporary sediment barriers such as silt fences or staked bales shall be installed adjacent to the crossing.

Contractor shall not place, dispose, or discharge soil, silt, bark, slash, sawdust, or other organic earthen materials in any stream, or any locations where they may be washed into waters by rainfall or runoff in such quantities as to be deleterious to fish, wildlife, or other beneficial uses.

### **4. Minor Perennial Streams**

Minor perennial streams are identified on the California Department of Fish and Game Streambed Alteration Agreement's listing of streams crossed by the project (Technical Condition – Part 4 Permits) and/or project drawings. No work shall take place in minor perennial streams without prior approval from the California Department of Fish and Game and District. If work in a minor perennial stream (including, but not limited to dewatering/diversion and trenching) is unavoidable, prior to any work within the stream channel, Contractor must submit a plan and obtain approval from District.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **5. Major Perennial Streams**

Major perennial streams are identified on the California Department of Fish and Game Streambed Alteration Agreement's listing of streams crossed by the project (Technical Condition – Part 4 Permits) and/or project drawings. No work shall take place in major perennial streams without prior approval from the California Department of Fish and Game and District. If work in a major perennial stream (including, but not limited to dewatering/diversion and trenching) is unavoidable, prior to any work within the stream channel, Contractor must submit a plan and obtain approval from District.

## **G. TRENCH DEWATERING**

Trench dewatering is usually necessary wherever groundwater is encountered or surface water flows into the trench and accumulates. All discharges (road bore dewatering, trench dewatering, hydrostatic test water dewatering, etc.) shall be performed in compliance with water quality requirements of the Regional Water Quality Board NPDES General Permit, SWPPP or waiver, and this plan. Dissipaters shall be utilized to prevent erosion at the pump outlet site. Pumping shall be to stable, vegetated, upland areas where there is no threat of silt-laden water flowing back into a flowing stream, wetland, vernal pool, storm water inlet or dry drainage. If necessary, dewatering facilities constructed of straw bales and silt fence (Figure 10, Low Volume Trench and Roadbore Dewatering Facility), and/or filter bags, shall be utilized to allow fine sediments to settle out before reaching a stream, wetland, vernal pool, storm water inlet or dry drainage. Dewatering sites in vegetated areas adjacent to the right-of-way shall be located with the assistance of District Environmental Monitor to ensure that no cultural resources, rare plants, or other sensitive environmental resources are impacted by the dewatering. Contractor shall amend the SWPPP to include trench and roadbore dewatering facilities, as required.

All excavations shall be kept free from water and all construction shall be in the dry. Contractor shall comply with the following:

- Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering all excavations. At all times, shall have on the project sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable.
- Provide a sufficient number of pumps so as to hold the groundwater level at an elevation of not less than 1 foot below the lowest elevation of the pipe, duct or other material to be placed.
- The dewatering operation shall be continuous, so that the excavated areas shall be kept free from water during construction, while concrete is setting and achieves full

## **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

strength, and until backfill has been placed to a sufficient height to anchor the work against possible flotation.

- Continue dewatering during backfilling operations such that the groundwater is at least 1-foot below the level of the compaction effort at all times. No compaction of saturated materials will be allowed.
- Dewatering devices must be adequately filtered to prevent the removal of fines from the soil.
- If pumping is required on a 24-hour basis, requiring engine drives, then engines shall be equipped in a manner to keep noise to a minimum.

The Contractor shall be responsible for any damage to the foundations or any other parts of existing structures or of the new work caused by failure of any part of the Contractor's protective works. After temporary protective works are no longer needed for dewatering purposes, the Contractor shall remove them.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **H. HYDROSTATIC TEST WATER**

Hydrostatic test water shall be discharged into a dewatering structure of straw bales, geotextile fabric and silt fencing (Figure 11, High Volume Dewatering Facility) or a baffle box. The discharge rate shall be moderate and directed onto a splashboard. The discharge facilities shall be designed to remove any sediments and dissipate the force of the water so that it does not cause erosion at the discharge point or carry sediment into streams or drainages. Contractor shall comply with all permit conditions. Contractor shall amend the SWPPP to include hydrostatic test water dewatering facilities, as required.

## **I. CLEANUP**

Final cleanup and permanent erosion control measures, as appropriate, shall be completed within ten (10) days after the ditch is backfilled, weather and soil conditions permitting. Contractor shall remove and properly dispose of all construction materials left on the right-of-way. Streambeds shall be returned to their pre-construction contours, and all banks shall be stabilized (with riprap, sand bags, erosion control fabric or seeding) as field conditions warrant and as permits require.

Ditch backfill shall be compacted according to the Specification for Pipeline Construction. The area left over the ditch shall be feathered to restore pre-construction topography and to blend the trench with adjacent areas. Gaps shall be left at drainages to allow surface flow.

After the trench has been backfilled and the work areas disked to relieve surface compaction, topsoil shall be replaced evenly over those areas that required topsoil stripping. Topsoil redistribution depths will vary, depending on stripping depths. Topsoil from adjacent undisturbed areas shall not be used. Contractor shall ensure that topsoil on cultivated lands does not contain more coarse fragments than the adjacent lands. Contractor shall remove stones greater than 4 inches in any shape or dimension from the segregated topsoils of actively cultivated or rotationally cultivated agricultural lands.

## **J. EROSION CONTROL MAINTENANCE DURING STORM EVENTS**

Contractor shall be responsible for inspecting, maintaining and repairing erosion control facilities during and immediately after storms. Contractor shall maintain a Storm Inspection Log that documents field inspections.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **3. PERMANENT EROSION CONTROL AND RESTORATION**

### **A. GENERAL**

Permanent erosion control, including re-vegetation, shall be installed as soon as possible following completion of construction. Re-vegetation shall follow the Soil Conservation Service Critical Area Planting specifications (described herein) unless landowner request or biological conditions stipulate a different re-vegetation requirement.

Contractor shall provide a Re-vegetation Specialist who shall be responsible for supervising the restoration program. Re-vegetation Specialist shall have five (5) years field experience in the Central Valley. Experience shall include irrigation analysis and implementation, plant collection and installation, weed control, project maintenance, vegetation monitoring, records keeping, and monitoring report preparation. Contractor shall submit the name and resume of the person who will be supervising the re-vegetation work.

Contractor shall be responsible for vegetation and plant maintenance requirements until July 1, 2005. Contractor's Re-vegetation Specialist shall monitor vegetation and plantings, as necessary, to determine frequency of maintenance requirements. Maintenance shall include replacement, reseeding, watering, weeding, repair of berms, and repair and installation of protection devices.

### **B. AGRICULTURAL AND RANGE LANDS**

The agricultural and range lands crossed by the alignment are characteristically flat to gently sloping with generally clayey soils. These soils are highly resistant to wind and rainfall erosion. Therefore, the permanent erosion control plan for these regions shall be primarily a function of expediting the restoration of the surface immediately following construction to a pre-construction condition.

Erosion control methods shall include the seeding of all disturbed areas, to stabilize the soils by absorbing the impact of raindrops, reducing velocity of runoff and allowing precipitation to enter the soil. The disturbed areas shall be treated as defined on the Construction Line List (Attachment A). If Contractor makes prior agreements with the property owner to perform seeding of disturbed soils on their own property, it shall be the responsibility of Contractor to ensure that the work is performed and that the work performed complies with the standards as defined in Contractor's contract. If the work is not performed to these standards or the work is not performed by the dates required herein, Contractor shall perform the work at its own expense. Contractor shall implement the following permanent erosion control measures at various locations totaling 100 acres to be identified by District at a later date.



# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES

## 1. Seedbed Preparation

A range of seedbed preparation methods, shall be used on the project. The seedbed preparation method used for any individual site shall depend on various factors including size of area, slope, potential for erosion and landowner requirements. Contractor shall prepare the seedbed to a depth of three to four (3 to 4) inches, where possible, by harrowing, disking or mechanical raking to provide a firm seedbed.

## 2. Seeding Method

Contractor shall supply all seed for seeding operations. Contractor shall seed disturbed areas within the right-of-way, as defined in the Construction Line List (Attachment A), by dry broadcasting or hydro seeding. Gradual slopes (less than 2:1) shall be seeded by dry broadcasting, if soils are not loose. Steeper slopes may require hydro seeding with appropriate equipment to ensure uniform cover. All seeding shall precede the planting of any cuttings and/or container stock performed by Contractor.

## 3. Dry Broadcasting Seeding

Dry broadcasting shall consist of uniformly broadcasting and using manually operated cyclone-type spreaders over tilled soil. Contractor shall either mechanically or manually rake (on contour) seeds into the top 3/8 inches of soil. Mechanical raking shall include the use of an agricultural rake or a spring-toothed harrow set lightly or similar methods approved by District Re-vegetation Specialist. Manual raking shall be followed by firmly tapping the soil with the back of rakes, hoes, or similar devices to ensure a good seed-to-soil contact.

## 4. Hydroseeding

Hydroseeding shall consist of mixing and applying seed with fiber and water. Hydroseed mix shall be applied at a rate of 1,500 lbs/acre of fiber mulch, 80 lbs/acre of organic tackifier and seed mix as described in Table 1, Erosion Control Seed Mix. Organic tackifier shall be Ecology Control, Terrack II or equivalent as approved by District Re-vegetation Specialist. Mixing of materials for application with hydroseeding equipment shall be performed in a tank with a built-in continuous agitation system of sufficient operation capacity to produce a homogeneous mixture and a discharge system that will apply the mixture at a continuous and uniform rate. The quantity of water shall be suitable for the application.

Contractor shall apply seed mixes at locations as defined on the Construction Line List (Attachment A) with the formulation as described in Table 1, Erosion Control Seed Mix. The prescribed seed mix is a reclamation mix designed for erosion control in both a non-irrigated setting and at water crossings.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **5. Fertilization and Soil Amendments**

Contractor shall be responsible for storing topsoil separately and replacing as specified herein. Contractor shall be responsible for applying chemical fertilizer, humus, manure, or other appropriate organic soil supplement to promote vegetation establishment.

## **6. Surface Mulching**

To reduce wind erosion and surface erosion from rainfall runoff, Contractor shall apply straw mulch to the soil in areas where Contractor is responsible for seeding as described in the Construction Line List (Attachment A). Seed (and amendments, if required) shall be first incorporated into a rice straw mulch, which shall be broadcast with a strawblower or modified farm manure spreader. The straw shall then be punched into the soil using a mulch tiller, a modified sheepsfoot roller or a weighted agricultural disc.

Clean, weed-free rice straw shall be used at the rates of 2,000 lbs/acre on zero to twenty-nine (0 to 29) percent slopes and 3,000 lbs/acre on slopes exceeding thirty (30) percent.

Hydroseeding as described above or placement of a biodegradable coir blanket can be used as a substitute for straw mulching if conditions warrant the use of alternative methods.

Contractor maintenance for surface mulching shall include:

- Inspections weekly and after storms
- Repair and perform maintenance on biodegradable blankets as necessary
- Replace straw much that has blown or washed away

## **7. Timing**

Seeding at water crossings under California Department of Fish and Game jurisdiction shall be completed as defined in the California Department of Fish and Game Streambed Alteration Agreement and USFWS Biological Opinion. Seeding in all other areas shall be conducted in the fall or early winter (preferably during October), which is the most favorable period of the year for seed germination. Due to the proximity of the construction zone to sensitive species, coordination and planning between Contractor and District Re-vegetation Specialist is critical. Contractor shall ensure that seeding is coordinated with the timing restrictions for sensitive wildlife species. If restoration of any segment within the right-of-way in the agricultural region is required, all implementation scheduling shall be pre-approved by District Re-vegetation Specialist. If the immediate post-construction seeding schedule cannot

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

be implemented because of sensitive wildlife species timing consideration, temporary soil erosion control measures shall be implemented until District Re-vegetation Specialist confirms that the window of sensitivity has passed.

## **8. Remedial Seeding**

Contractor shall be required to reseed areas that fail to grow by the end of the first growing season if (70) percent vegetative establishment is not achieved. Seventy (70) percent establishment is based on the density of the natural herbaceous cover in the surrounding area. District Re-vegetation Specialist shall perform seeding success surveys and provide Contractor with documented results. Contractor shall also be responsible for reseeding areas damaged by erosion and subsidence and repair work. Contractor shall be required to reseed repaired areas that fail to grow by the end of the first growing season if (70) percent vegetative establishment is not achieved.

## **C. SUBURBAN AND INDUSTRIAL LANDS**

The pipeline construction corridor within the urban and residential regions lies adjacent to existing railroad property or surface streets. Restoration of disturbed soils within these areas shall be as defined on the Construction Line List (Attachment A).

## **D. WETLAND AND RIPARIAN PLANTING**

All other natural or sensitive water crossings have been avoided to the maximum practical extent. The woody planting prescribed for the remaining man-made water crossings shall be implemented by Contractor in accordance with the standard practices and requirements of the individual landowners, water districts, and/or California Department of Fish and Game.

### **1. Riparian Vegetation**

Native riparian woody vegetation that must be removed by construction shall be replaced by Contractor at a ratio of 3:1, unless otherwise agreed to by District and agency having jurisdiction. Removal or cutting vegetation at the Cosumnes river crossing is prohibited. After the flagging of the construction zone by Contractor and before initiation of ground breaking, District Re-vegetation Specialist shall identify and count all native riparian woody species prior to their removal. District shall provide Contractor with a list of required planting locations, species identification and numbers of species that Contractor will be responsible for obtaining, installing and maintaining.

During the contract period, quality workmanship shall be maintained. Proper timing for planting, maintenance and plant protection shall be implemented by Contractor. Plant materials shall be kept in healthy vigorous condition.

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES

## 2. Planting Materials

Stream crossings with riparian vegetation are listed on Table 1 of the Streambed Alteration Agreement (Technical Condition Part 4 – Permits). Contractor shall provide all plants required for planting. Contractor shall be responsible for coordinating with property owners in order to obtain permission to cut material from area adjacent to the right-of-way for local pole cuttings. Contractor shall provide District with information describing the source of the plant materials and whether the material is from a nursery or from on-site cuttings.

## 3. Planting Methods

Contractor shall plant trees and shrubs in irregular patterns using current re-vegetation standards as defined herein. Cottonwood and willow shall be planted as unrooted whips, and other species shall be planted from special re-vegetation containers such as depots or liners.

Pole cuttings shall be obtained from adjacent or nearby areas during the fall or winter. Cuttings shall be taken with sharp shears or saw, and shall be cut square on top and slanted on the bottom. Trim side branches from cutting with sharp pruning shears, flush with the pole cutting, without causing injury to buds. Cuttings shall be kept moist by covering them with moist fabric after cutting, before planting, and during transport. If possible, cuttings shall be planted the day they are cut. If stored overnight, cuttings shall to be fully immersed in water or wrapped in moist fabric.

Cottonwood pole cuttings shall be a minimum of sixty (60) inches long with a bottom diameter of 5/8 to 1- inches. Planting holes shall be augured eight to twelve (8 to 12) inches in diameter, and to a minimum depth of four (4) feet. Cottonwood pole cuttings shall be placed approximately four (4) feet deep into the planting hole with slanted end pointing down (buds pointing up). Refer to Figure 12, Pole Cutting Detail. Willow pole cuttings shall be eighteen (18) inches long. Planting holes shall be augured six to eight (6 to 8) inches in diameter, and to a depth of one (1) foot. Willow pole cuttings shall be placed approximately one (1) foot deep into the planting with slanted end pointing down (buds pointing up). Refer to Figure 13, Short Cutting Planting Detail.

Contractor shall backfill and compact the planting holes with native soil. Contractor shall construct a four (4) inch high, hand-compacted earth berm, thirty (30) inches in diameter for a watering basin. Immediately after installation Contractor shall water backfill thoroughly to settle the soil. Contractor shall supply the water. Soil level shall be adjusted as necessary to finished grade. Apply three (3) inches of organic mulch or a three (3) foot square weed barrier mat within the watering basin (refer to Figure 14, Sheet Mulch) when planting in upland areas where material will not be disturbed by the stream flows.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

Contractor shall follow these procedures when installing container stock (refer to Figure 15, Container Plant Detail):

- Excavate a planting hole twice as large as the rootball. On slopes, the hole shall be placed toward the front third of the terrace.
- Partially backfill the planting hole with loose, native soil.
- With the palm of the hand covering the open ends, upend the plant container.
- Carefully tap the container so the plant rests upside down on the hand leaving the rootball completely intact.
- If the plant is rootbound, loosen and scarify the rootball. Insert the rootball into the planting hole.
- Firm the soil around the plant and add more backfill if necessary to bring soil to or slightly above the root crown at finished grade.
- Construct a four (4) inch high berm along the forward edge of the planting terrace. Irrigate planting immediately after installation to settle the soil. Contractor shall provide the water.
- On slopes, construct a four (4) inch high berm along the forward edge of the planting terrace. Irrigate planting immediately after installation to settle the soil. Contractor shall provide the water.
- Place additional soil around the root crown if necessary.
- Apply three (3) inches of organic mulch or a three (3) foot square weed barrier mat within the watering basin when planting in upland areas where material will not be disturbed by the streams flow.
- District Re-vegetation Specialist shall inspect and accept all plants prior to planting. Plants with circled roots, girdling or j-roots shall be unacceptable.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **4. Irrigation**

Contractor shall irrigate woody plant species by spot watering (watering by hand from a local source) immediately after planting, and periodically during the first growing season until the onset of steady fall rains.

After the first watering at the time of planting, Contractor shall apply water to all plants as often and in sufficient amount as conditions may require to keep the plants in a healthy vigorous growing condition until completion of the Contract. Contractor shall monitor sites weekly for irrigation needs during the first growing season until the onset of fall rains. Contractor's Re-vegetation Specialist shall determine amount and frequency of waterings. Contractor shall continue to monitor and replace plants until July 1, 2005.

## **5. Fertilization and Soil Amendments**

Contractor shall fertilize container plantings with 0.3 ounces of Osmocote 14-14-14 slow release fertilizer per plant. Fertilizer shall be evenly spread in backfill planting hole.

## **6. Protection Devices**

If Contractor's Re-vegetation Specialist determines there is likelihood of local wildlife or domestic animal damage from grazing, browsing or trampling, Contractor shall place protective screens over individual plants and install gopher baskets immediately after planting. If Contractor does not install protective devices and plants are damaged by local wildlife or domestic animals, Contractor shall replace and maintain plants at Contractor's expense. Replanted plants shall be maintained in accordance with the provisions herein.

## **7. Erosion Control Fabric**

On steep slopes (greater than 2:1) and at riparian crossings, pipeline Contractor Shall determine on a site-by-site basis whether a coir blanket or 100% coconut fiber high-strength organic geo-textile grid (BonTerra CF7) is required. Mats shall be limited to critical areas needing immediate attention and areas inaccessible to machinery (Refer to Figure 16, Erosion Control Fabric Installation).

## **8. Timing**

The timing of planting is critical. All planting shall be conducted during the most favorable period of the year for plant establishment, which is generally October 15 to March 1 (preferably during October). If seasonal rainfall is low or does not coincide with the desired planting date, planting location and containerized plant materials shall be irrigated prior to planting. Due to the proximity of the construction zone to sensitive species, coordination and planning between Contractor's Re-vegetation

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

Specialist and District Re-vegetation Specialist is critical. Contractor shall ensure that planting is coordinated with the timing restrictions for sensitive species. If restoration of any segment within the right-of-way in riparian areas is required, all implementation scheduling shall be pre-approved by District Re-vegetation Specialist.

## **9. Monitoring and Maintenance**

Contractor's Re-vegetation Specialist shall monitor plantings, as necessary, until July 1, 2005. District's Re-vegetation Specialist shall continue to monitor plantings for five (5) more years. After June 1, 2005 and Prior to July 1, 2005 Contractor's Re-vegetation Specialist shall meet with District's Re-vegetation Specialist to transition maintenance responsibilities and to determine if Contractor has performed sufficient maintenance. If insufficient maintenance as described herein has not been performed, Contractor shall replace, without cost to District as soon as weather conditions permit all dead plants and all plants not in a vigorous, thriving condition.

## **10. Weed Control**

Contractor shall perform weed control around woody plantings. Weed control shall include maintaining a weed free zone measuring thirty (30) inches in diameter around all plants. Weeds shall be removed when small before they compete with plantings. Some areas may require an area larger than thirty (30) inches in order to protect woody plantings from invasion by weeds. Contractor shall determine if additional clearance of a weed free zone is required in order to maintain healthy vigorous woody plantings. Weeds shall be removed by carefully cutting or pulling weeds so as not to disturb the planted seedling or container plant. Contractor shall weed as often as necessary in order to maintain healthy vigorous wood plantings.

## **11. Plant Protection**

Contractor as needed shall provide plant protection. Plant protection includes, but is not limited, to the following:

- Aluminum protective screens
- Animal repellents – Repellants, approved by District, shall be applied according to the registered product label. Repellants shall be re-applied as needed and according to the product label.
- Debris/Material Removal – Debris and other items that have drifted into the area shall be removed.

Contractor shall clean up and replace protective devices that come off. Screen mesh devices shall be opened at the top as the plants grow vertically but shall be left in

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

place to continue to provide shade and to prevent rodent girdling of stem tissue. The screens shall be removed prior to the final release of the project. All other plant protection devices shall be monitored and maintained until removal is recommended by District.

## **12. Replacement Planting**

Replacement planting consists of additional planting during October of the year following determination that the planting is unsuccessful. The number of plants to replant shall be determined by Contractor's Re-vegetation Specialist and verified by District. Criteria for determining a successful planting shall include, but not limited to the following items.

Plants shall:

- survive for two full growing seasons with new growth present during the past year
- be identified as proper species as per color coded flagging
- be non-chlorotic
- be unbroken
- not have been debarked (girdled) over twenty-five (25) percent of the circumference of the stem
- have an unbrowsed leader with a healthy terminal bud
- be free of erratic growth
- not be deformed from Contractor's practices or negligence
- be free to grow within any installed animal damage control device
- be free of major disease, insects or animal damage

Woody plants shall be replanted to achieve a survival rate of eighty-five (85) percent the first year after planting and eighty (80) percent the second year. The cost of replacement planting and maintenance shall be at Contractor's expense.

## **4. CONTRACTOR SUBMITTALS**

Within sixty (60) days after contract award, Contractor shall verify and report to District that specified seeds have been ordered or pre-arranged. Proposed seed substitutes must be approved by District. Seed shall be premixed and labeled by the seed supplier certifying species included, approximate germination percentage and purity. All seed mix labels shall be removed from the seed bag and given to District by Contractor at the time of seeding.



# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

Contractor shall document locations of temporary erosion control measures that will be left in place during the rainy season (October 1 to April 30) on a Temporary Erosion Control Log. Log format shall be as mutually agreed between District and Contractor. The log shall be provided to District on a weekly basis as clean up activity progresses. The log shall document the milepost, parcel number and station number of sedimentation or erosion control facilities including, but not limited to the following:

- Silt fences, straw bales and sandbag barriers
- Storm drain protection devices
- Temporary culverts

Contractor shall be responsible for inspecting, maintaining and repairing erosion control facilities during and after storms as described in this document and Contractor's SWPPP.

Contractor shall maintain a Storm Inspection Log that documents field inspections. Contractor shall log date of inspection, location of inspection (refer to Temporary Erosion Control Log above) name of inspector and maintenance and/or repair work performed. Where significant erosion has occurred, information on intensity and type of erosion (mild, moderate, heavy/gully, rilling, washouts, etc.) shall be recorded. The storm inspection log shall also note areas that cannot be repaired until the spring due to saturated soils or inaccessibility to equipment. Contractor shall submit inspection logs to District on a weekly basis. Log format shall be as mutually agreed between District and Contractor.

Contractor shall maintain a daily Water Truck Activity Log that includes the number of gallons of water used to reduce the dust at the construction sites. Contractor shall submit copies of these logs to District on a weekly basis.

Contractor shall submit a Daily Seeding Log to District documenting daily seeding activities. The report form and format shall be as mutually agreed between District and Contractor. The log shall document the station number, milepost and property owner. The log shall include the quantity and type of fertilizer (if used), seed mulch (type and lbs/acre), and equipment used to implement this specification; the acreage treated, and the dates of seeding. Copies of the log shall be provided to District on a daily basis during seeding activities.

Contractor shall provide a list of projects it has successfully completed and the name of the owner representative who supervised the work.

Contractor shall provide District with monthly Nursery Status Reports for all plant materials being ordered for re-vegetation work.

Contractor shall submit a Daily Planting Log to District documenting daily planting activities. The report form and format shall be as mutually agreed between District and Contractor. The log shall document the station number, milepost and property owner. The

## **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

log shall also include the quantity and type of fertilizer (if used), plant type, plant size, and equipment used to implement this specification; and the dates of planting. Copies of the log shall be provided to District on a daily basis during planting activities.

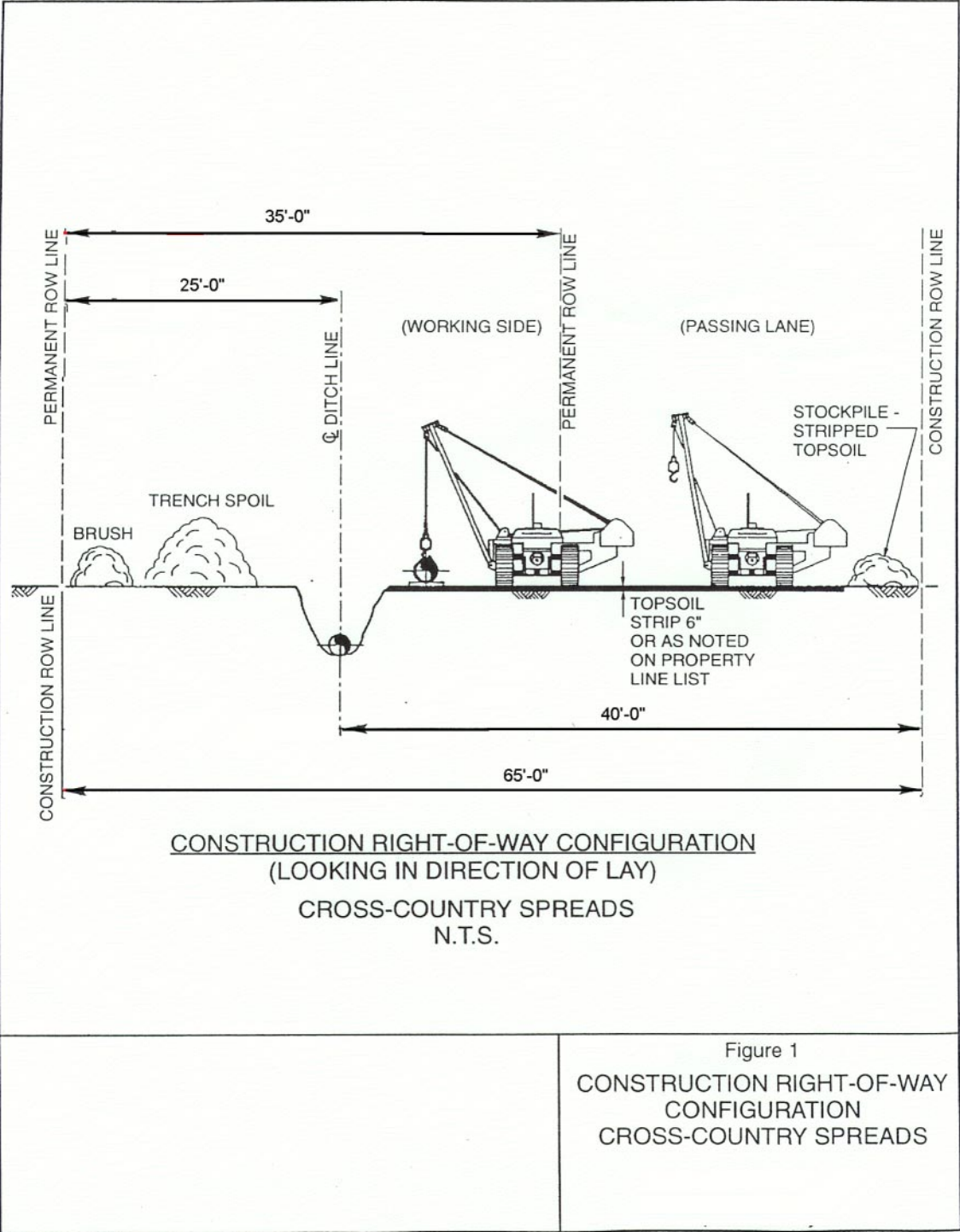
# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

**TABLE 1. Erosion Control Seed Mix**

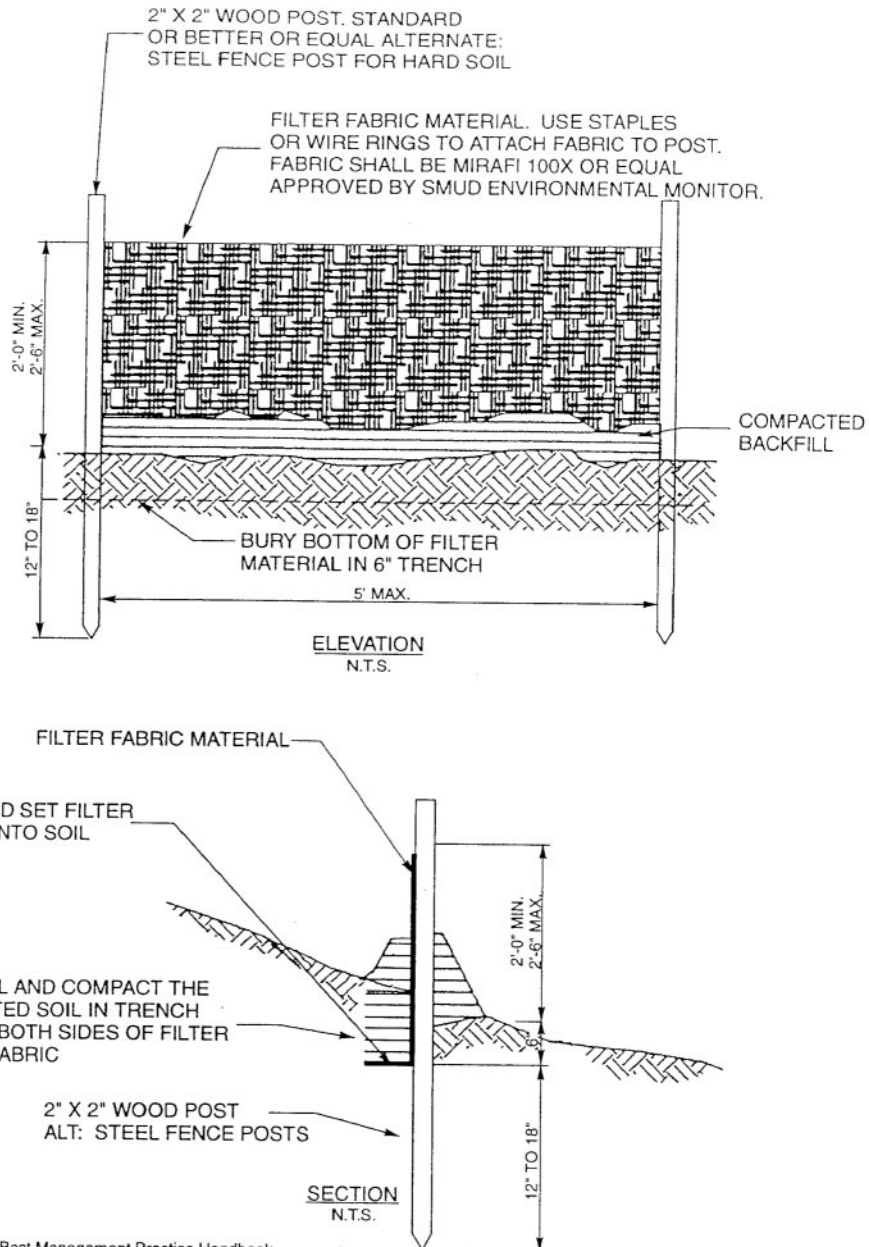
Requirements for a seed mix are generally part of the final permit approval, and as such CPP has not yet received a final seed mix recommendation. The following standard typical seed mixture was provided by CDFG for a recently approved project along a Central Valley streamcourse (Wicker 2002). It was provided to construction contractors to allow for standard cost estimates for the project.

California Brome	8 lb/acre
Meadow Barley	7 lb/acre
Blue Wild Rye	6 lb/acre
California Poppy	1 lb/ acre
Zorro Annual Fescue	3 lb/acre
Rose Clover	5 lb/acre

**EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN  
GUIDELINES**



# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: California Storm Water Best Management Practice Handbook

## Installation Requirements:

1. Silt fence shall be installed to filter sediment from surface runoff.
2. Silt fences shall be placed to follow (run parallel to) the contours.
3. On upslope installations, both ends of the silt fence shall be turned and extended upslope.

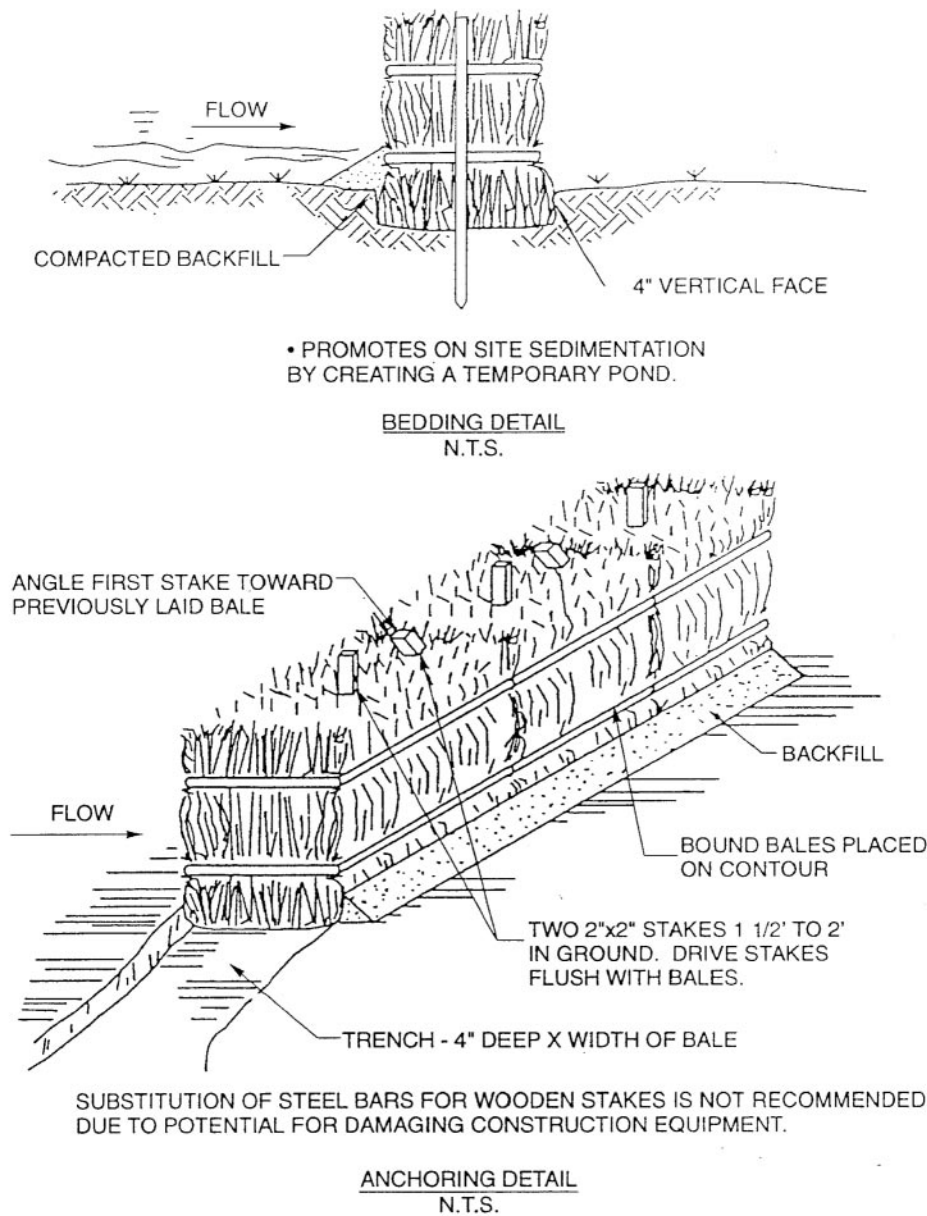
## Maintenance Requirements:

1. Inspect weekly during dry periods and during and immediately after each rainfall. Repair as necessary. Sediment must be removed when it reaches approximately 1/3 the height of the fence, especially if heavy rains are expected.
2. Remove silt fence after permanent vegetation cover is established.
3. Areas disturbed as a result of removing silt fence shall be restabilized by seeding

Figure 2

## SILT FENCE

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: California Storm Water Best Management Practice Handbook

## Installation Requirements:

1. Install prior to grading.
2. Angle first stake toward previously laid bale.
3. Place in 4" deep trench.
4. Bales shall be fitted tightly together so that no gaps remain.
5. When removed, scatter silt and straw over work limits and remove plastic binding material.
6. Straw bale checks may be used to trap sediment, but shall not be used to dam high-load water flow.

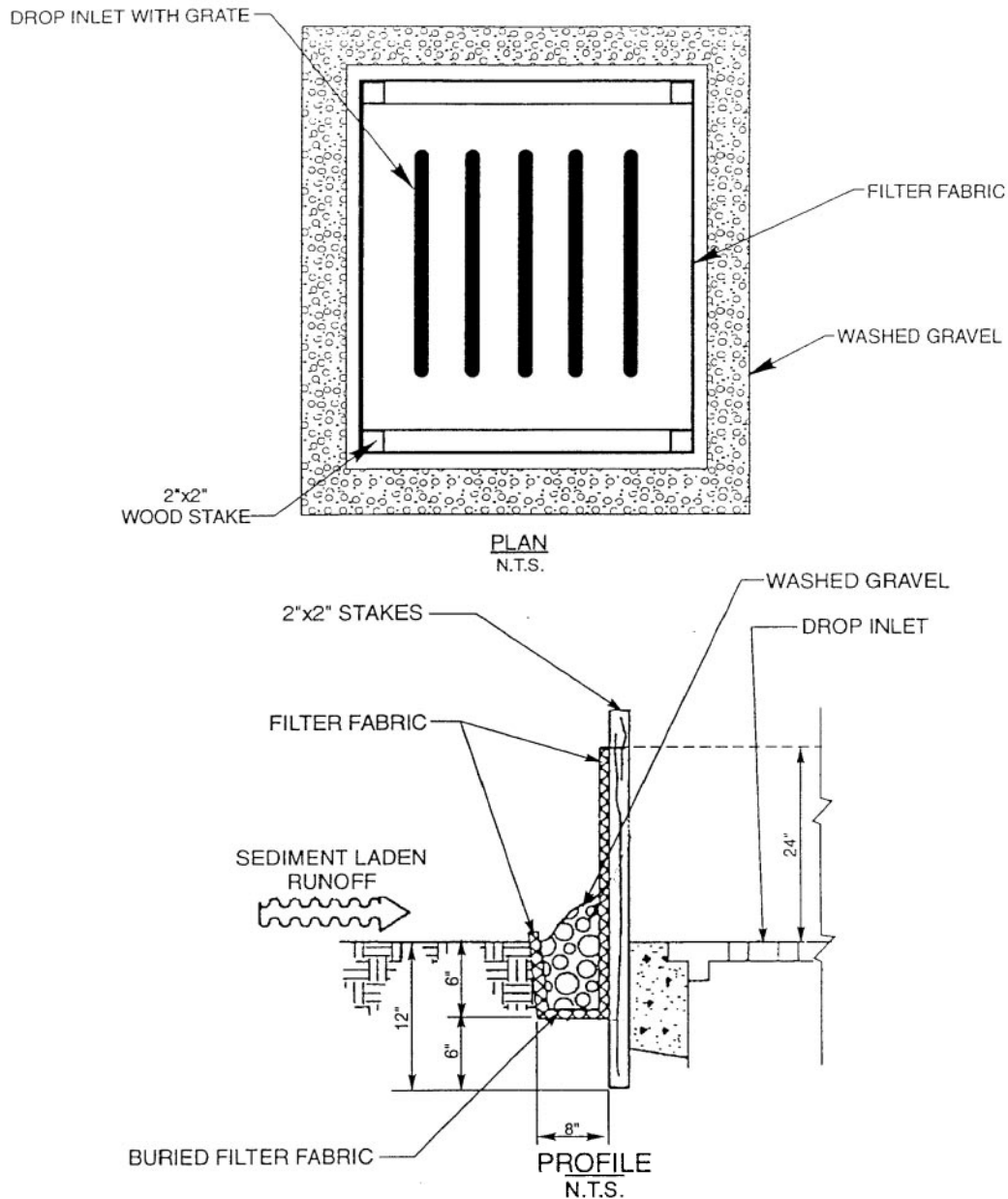
## Maintenance Requirements:

1. Inspect weekly during dry periods and during and immediately after each rain.
2. Replace bales which have decomposed or whose bindings have broken.
3. Remove sediment behind the barrier when it reaches a depth of 6".

Figure 3

## STRAW BALE BARRIER

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: California Storm Water Best Management Practice Handbook

## Installation Requirements:

1. Place stakes around perimeter of the inlet a maximum of 3' apart and drive them at least 12" into the ground. The stakes must be at least 3' long.
2. Excavate a trench approximately 8" wide and 6" deep around the outside perimeter of the stakes. Backfill trench with 3/4" or less washed gravel.

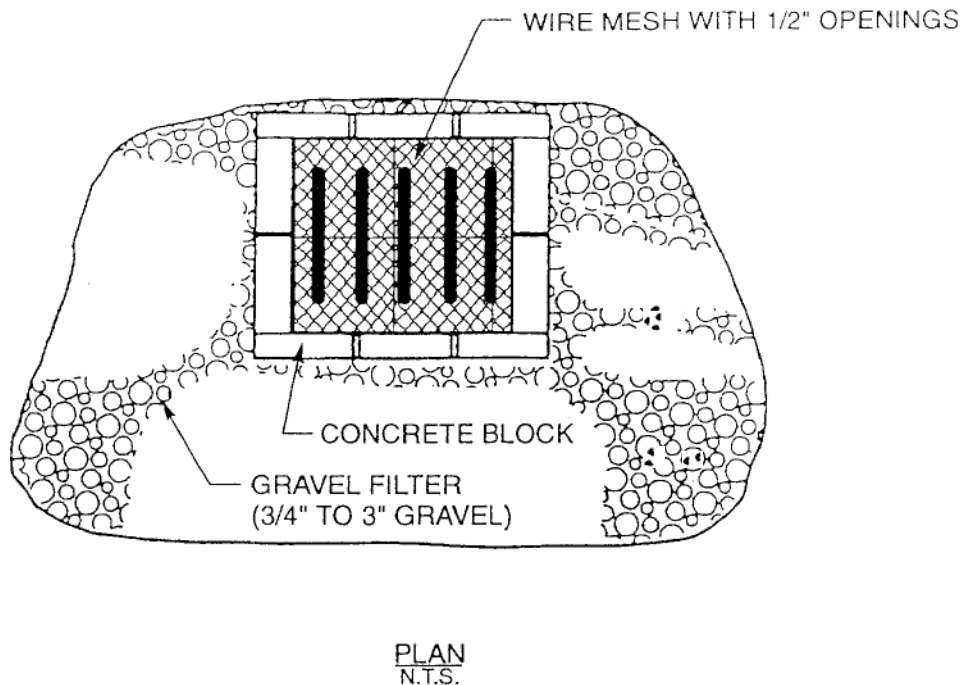
## Maintenance Requirements:

1. Inspect weekly during dry periods and during and immediately after each rain.
2. Replace clogged filter fabric immediately.
3. Remove sediment when depth exceeds half the height of the filter.
4. Remove as soon as upstream soils are stabilized and streets are swept.

Figure 4

**FILTER FABRIC FENCE  
DROP INLET FILTER**

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: California Storm Water Best Management Practices Handbook

## Installation Requirements:

1. Place hardware cloth or comparable wire mesh with 1/2" openings over the drop inlet so that the wire extends a minimum of 1' beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place filter fabric over the wire mesh.
2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4", 8", and 12" wide. The row of blocks should be at least 12" but no greater than 24" high.
3. Place wire mesh on the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 1/2" openings.
4. Pile washed stone against the wire mesh to the top of the blocks. Use 3/4" to 3" gravel.

## Maintenance Requirements:

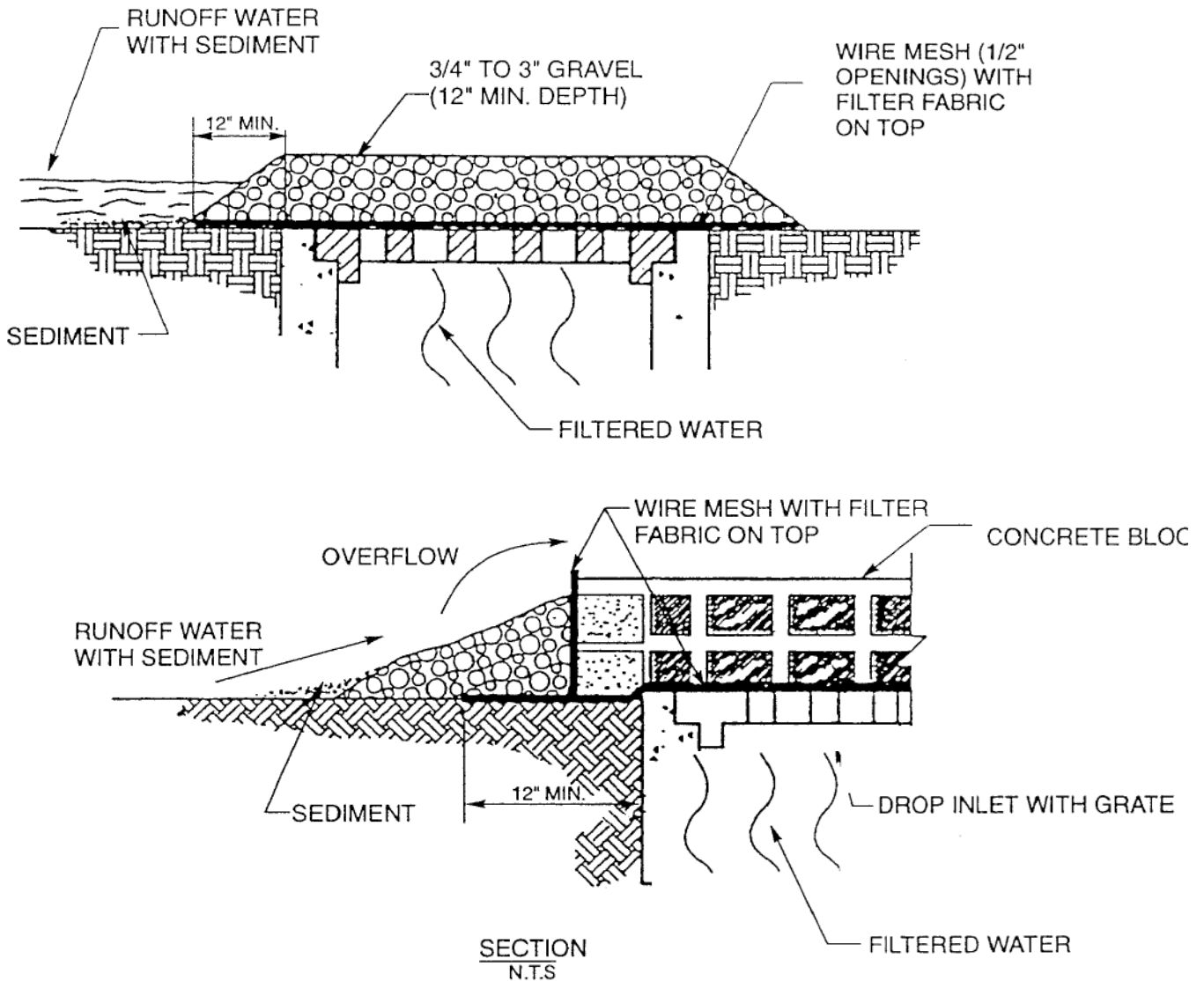
1. Inspect weekly during dry periods and during and immediately after each rain.
2. Remove gravel clogged with sediment from the inlet and dispose of properly. Replace with clean gravel.
3. Remove as soon as upstream soils are stabilized and streets are swept.

Figure 5

## BLOCK AND GRAVEL FILTER AT DROP INLET



# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



## Installation Requirements:

1. Place wire mesh over the drop inlet so that the wire extends a minimum of 1' beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with 1/2" openings. If more than one strip of mesh is necessary, overlap the strips. Place filter fabric over wire mesh.

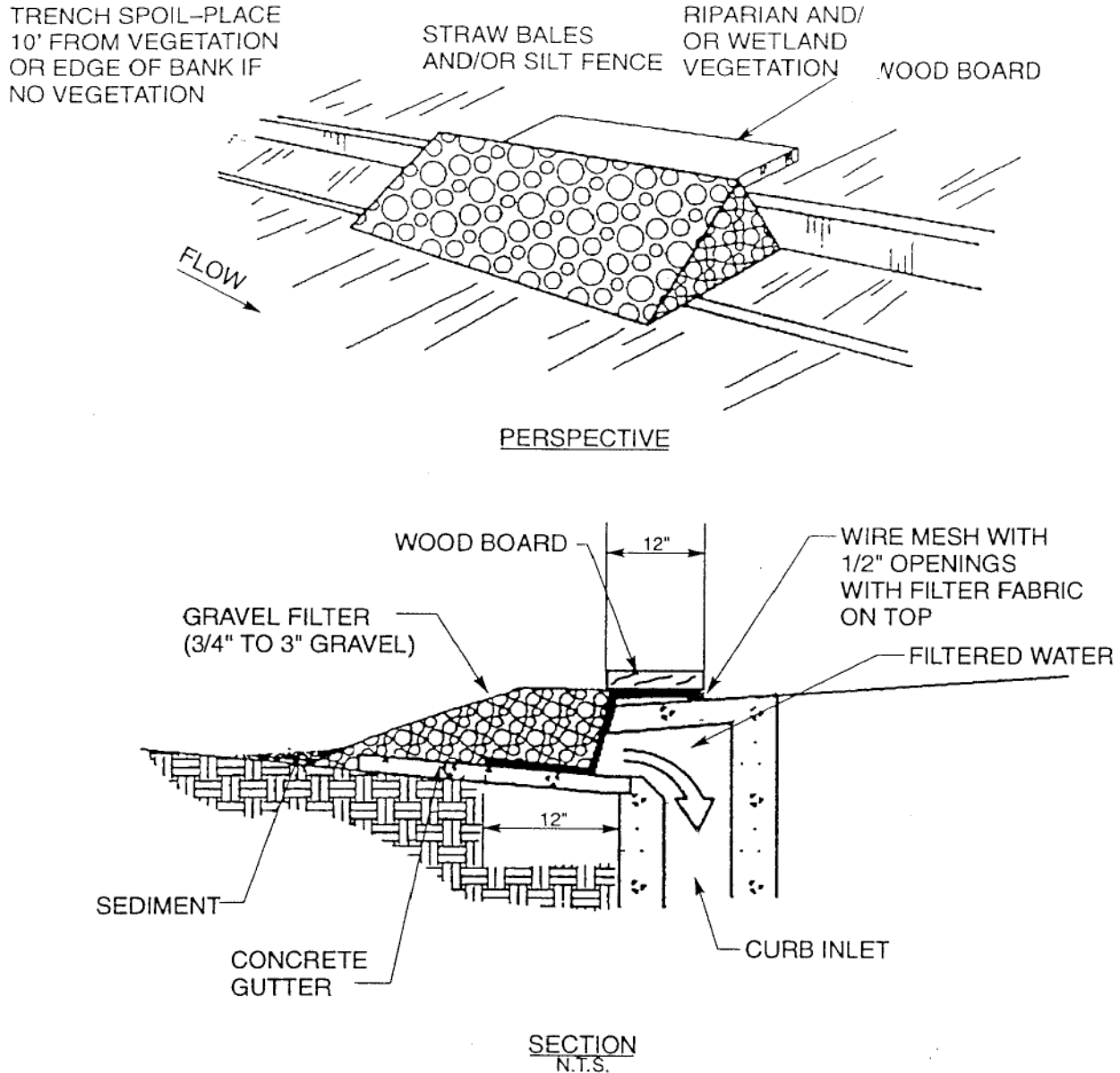
## Maintenance Requirements:

1. Inspect weekly during dry periods and during and immediately after each rain.
2. Remove gravel clogged with sediment from the inlet and dispose of properly. Replace with clean gravel.
3. Remove as soon as upstream soils are stabilized and streets are swept.

Figure 6

GRAVEL AND WIRE MESH-  
FILTER FOR DROP INLET

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: California Storm Water Best Management Practice Handbook

Figure 7

## GRAVEL AND WIRE MESH FILTER FOR CURB INLET

### Installation Requirements:

1. Place wire mesh over the drop inlet so that the wire extends a minimum of 1' beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with 1/2" openings. If more than one strip of mesh is necessary, overlap the strips. Place filter fabric over wire mesh.

### Maintenance Requirements:

1. Inspect weekly during dry periods and during and immediately after each rain.
2. Remove gravel clogged with sediment from the inlet and dispose of properly. Replace with clean gravel.
3. Remove as soon as upstream soils are stabilized and streets are swept.

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

**Figure 8 – (Not Used)**

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

**Figure 9 – (Not Used)**

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES

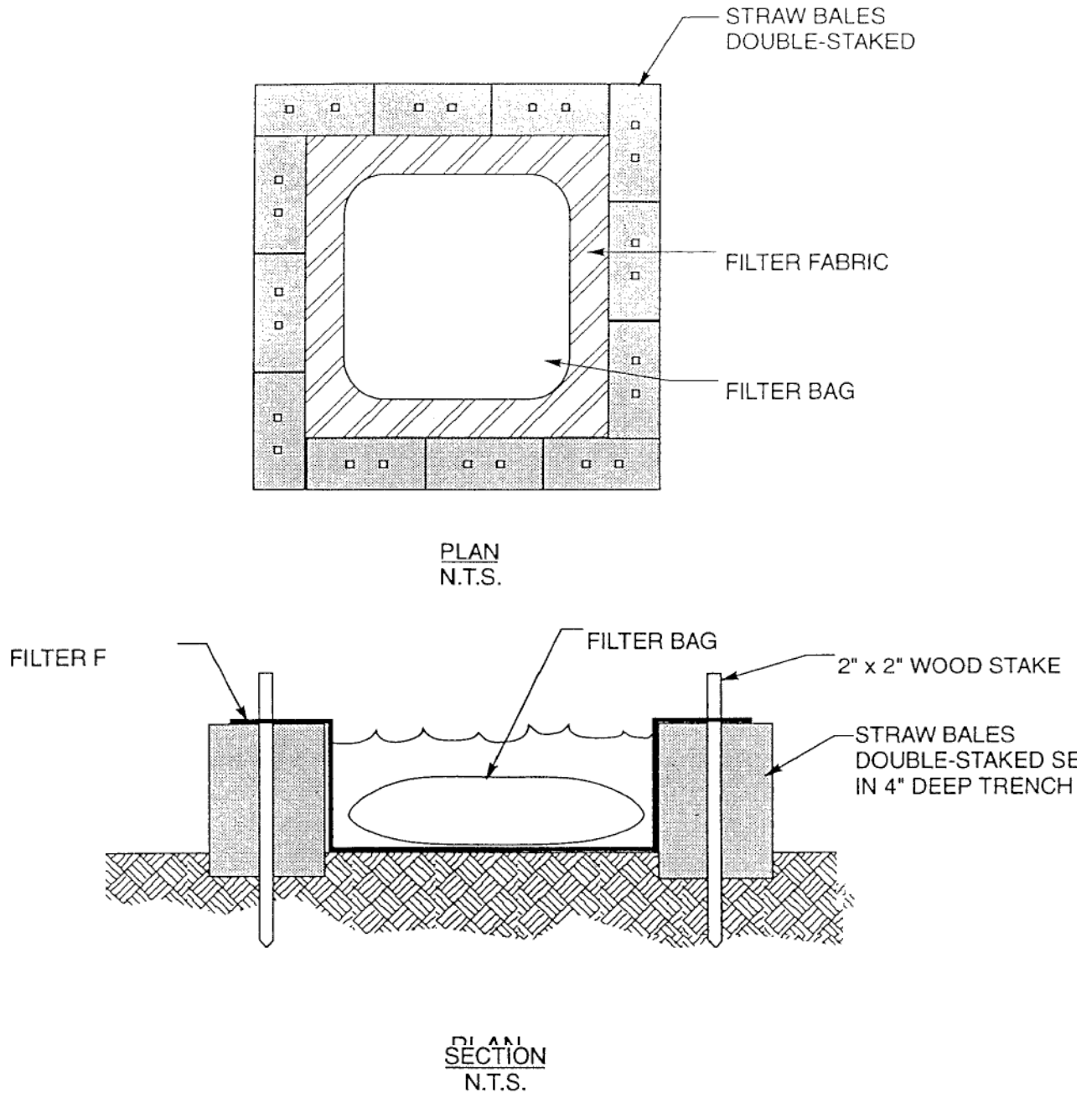


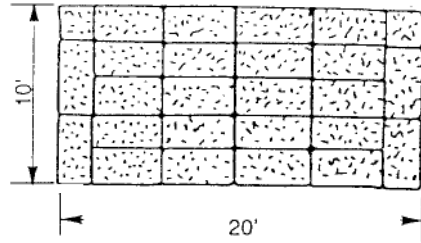
Figure 10

## Installation Requirements:

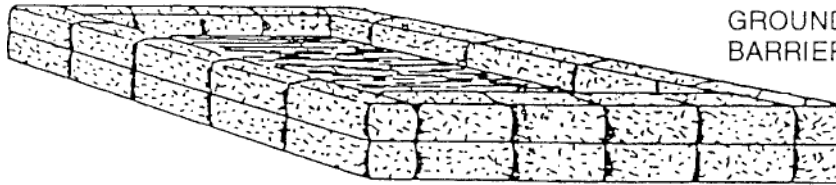
1. Water pumped out of trench shall not be discharged into waterway or off ROW. Water shall be discharged into a dewatering structure.
2. Pump flow shall be controlled so that discharge does not overflow dewatering structure.
3. Pump suction hose shall not be allowed to set on the trench bottom throughout dewatering. Provisions must be made to elevate the suction hose to at least one foot above the bottom until bottom dewatering is necessary.
4. Arrange straw bales on level land, tightly packed as shown to cover an area that will handle the actual flow.
5. Install a layer of filter fabric inside the structure.

## LOW VOLUME TRENCH AND ROAD BORE DEWATERING FACILITY

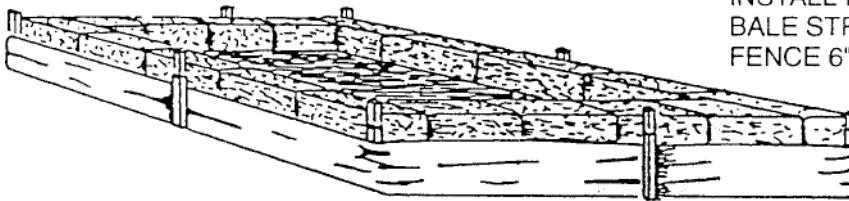
# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



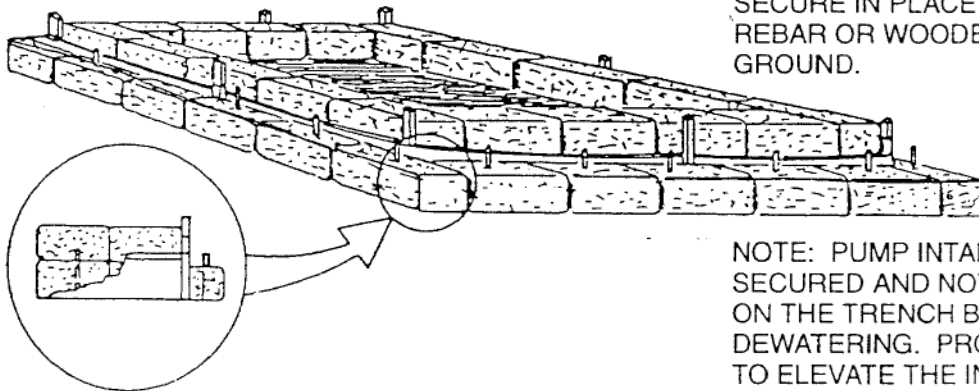
STEP 1  
ARRANGE STRAW BALES ON LEVEL LAND  
TIGHTLY PACKED AS SHOWN TO COVER  
MINIMUM AREA OF 200 SQUARE FEET, AND  
SIZED TO HANDLE ACTUAL FLOW.



STEP 2  
INSTALL ANOTHER LAYER OF STRAW  
BALES ON THE OUTER EDGE. INSTALL  
TWO 2"X2" STAKES 1 1/2' TO 2' IN  
GROUND (SEE FIGURE 3. STRAW BALE  
BARRIER).



STEP 3  
INSTALL FENCE ALL AROUND THE STRAW  
BALE STRUCTURE AS SHOWN. DIG IN SILT  
FENCE 6" (SEE FIGURE 2. SILT FENCE).



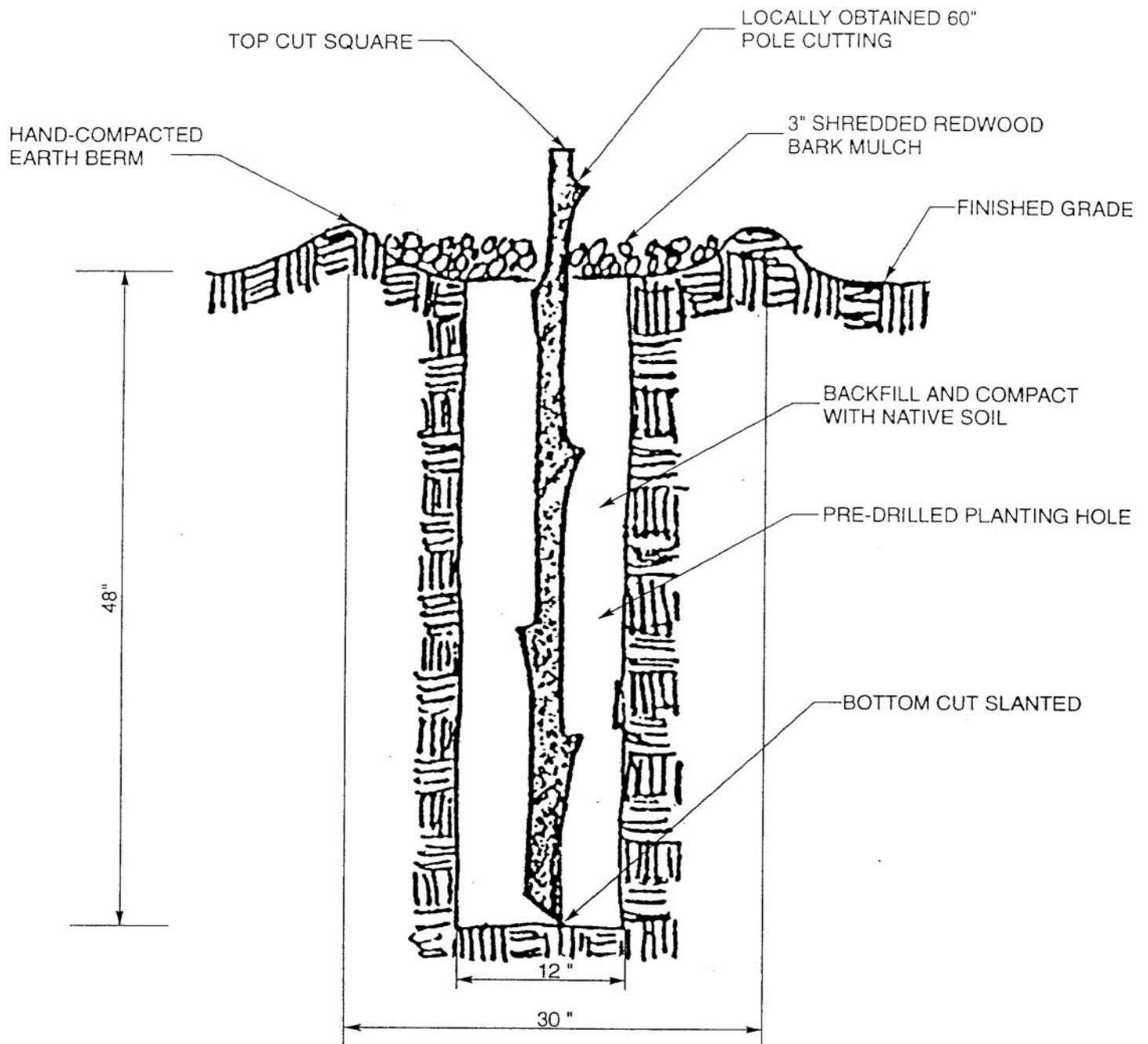
STEP 4  
INSTALL ANOTHER LAYER OF STRAW BALES  
ON THE OUTSIDE OF THE SILT FENCE AND  
SECURE IN PLACE BY DRIVING A 2"X2"  
REBAR OR WOODEN STAKE 1 1/2' TO 2' IN  
GROUND.

NOTE: PUMP INTAKE HOSE MUST BE  
SECURED AND NOT BE ALLOWED TO REST  
ON THE TRENCH BOTTOM THROUGHOUT  
DEWATERING. PROVISIONS MUST BE MADE  
TO ELEVATE THE INLET HOSE TO AT LEAST  
ONE FOOT ABOVE THE BOTTOM UNTIL  
BOTTOM DEWATERING IS NECESSARY.

Figure 11

HIGH VOLUME  
DEWATERING FACILITY

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES

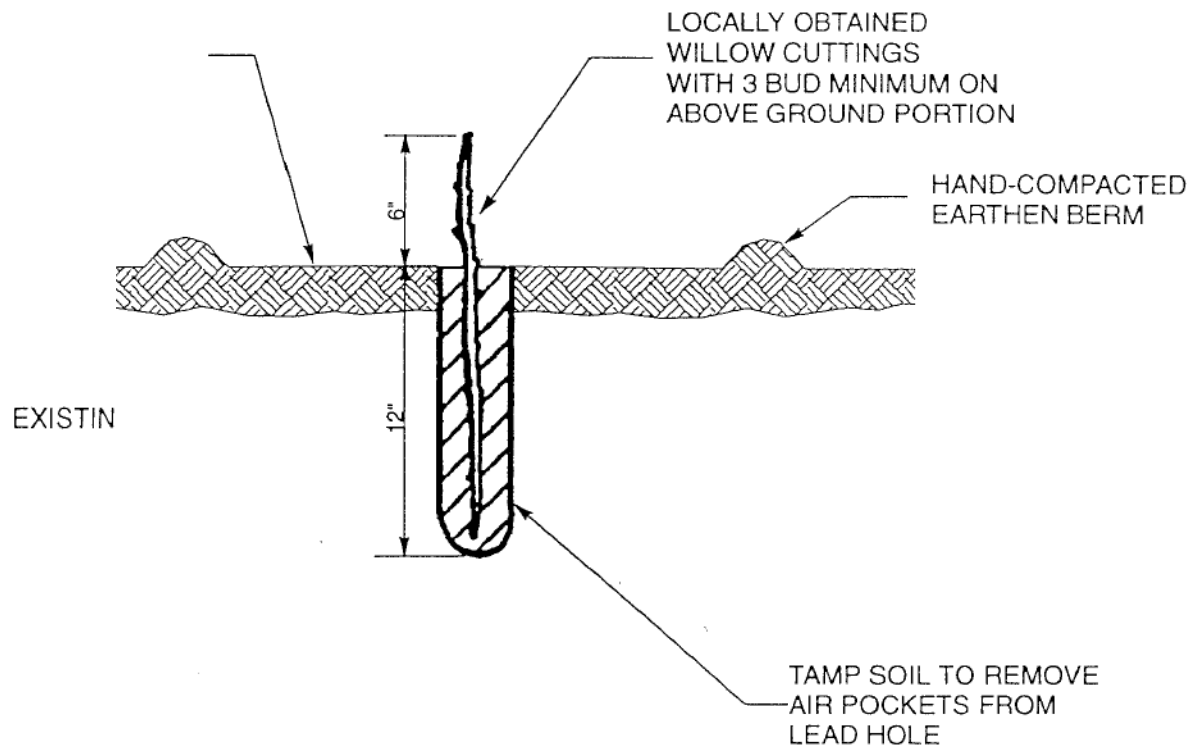


POLE CUTTING DETAIL  
N.T.S.

Figure 12  
POLE CUTTING DETAIL

Source: The Habitat Restoration Group

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: Biotechnical Slope Protection and Erosion Control

Figure 13

SHORT CUTTING  
PLANTING DETAIL



# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES

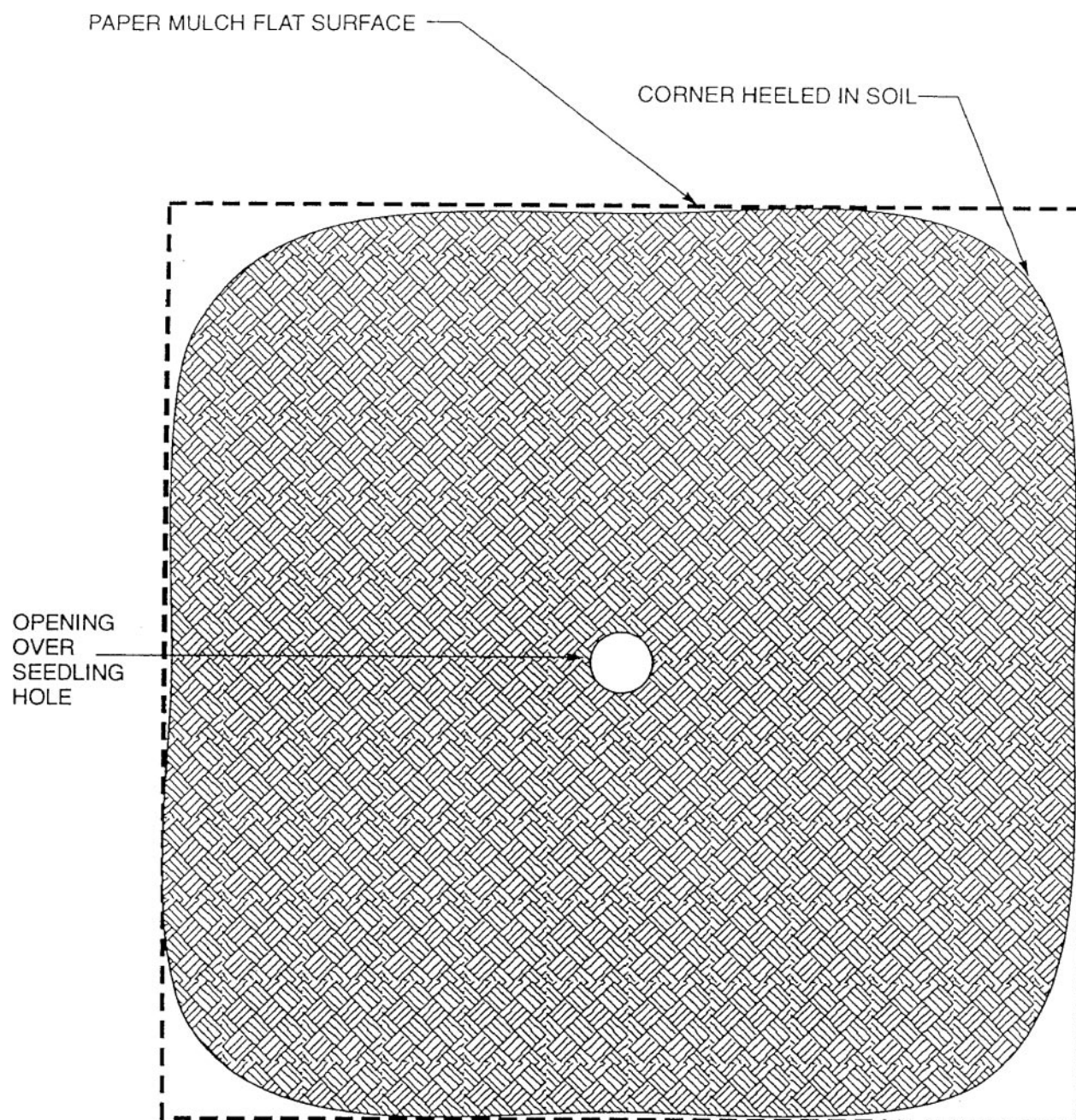


Figure 14  
SHEET MULCH

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES

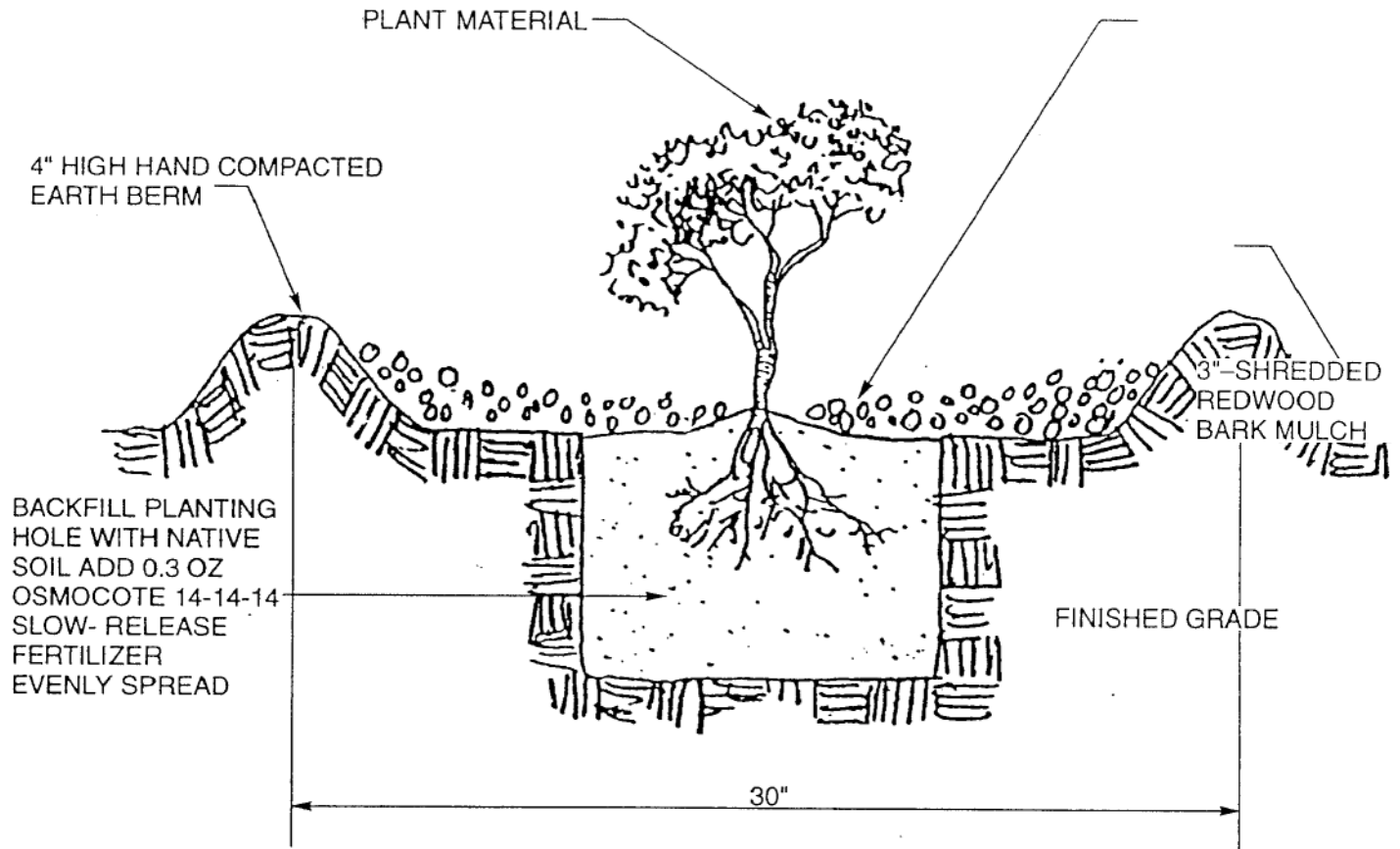
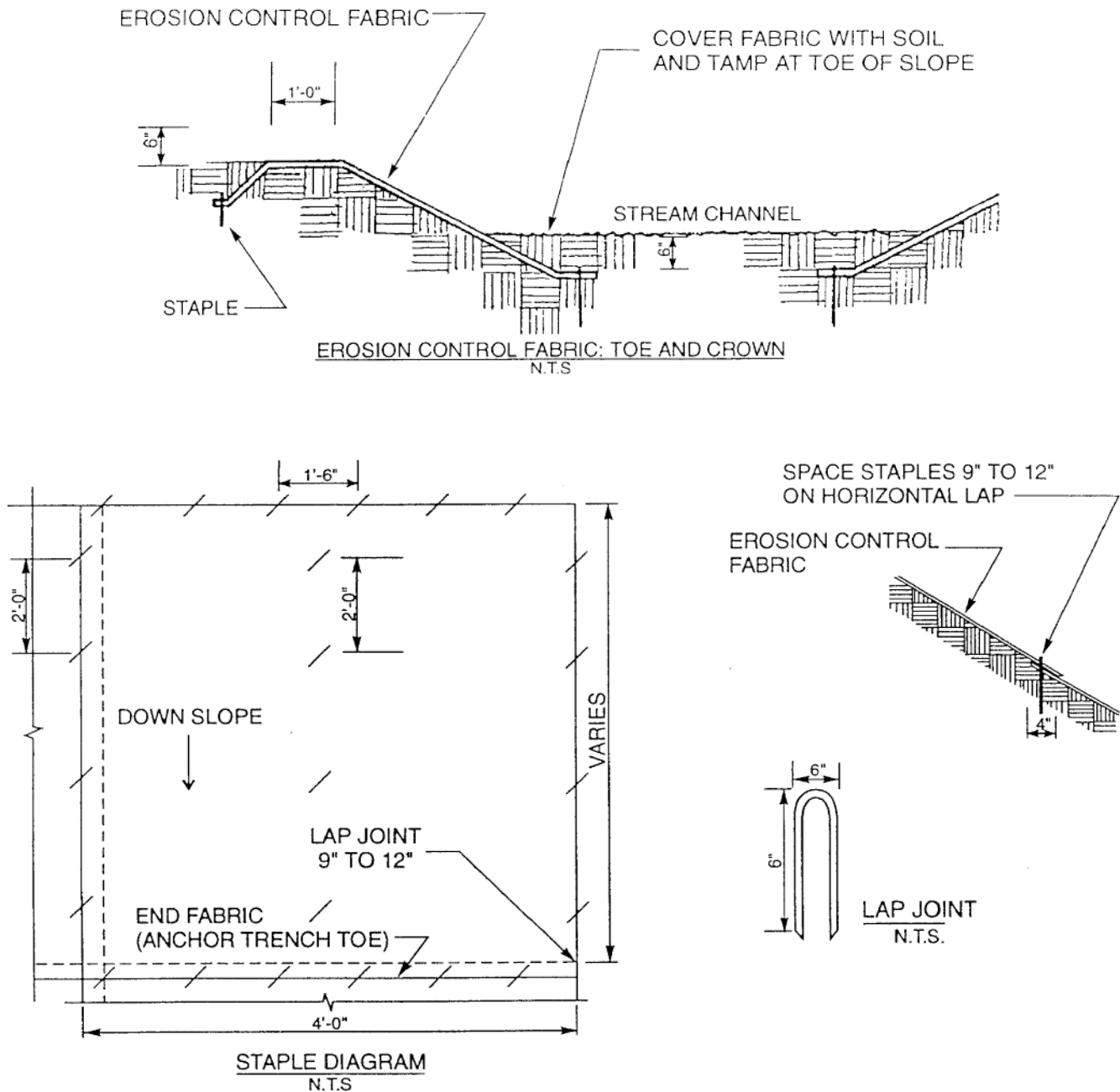


Figure 15

## CONTAINER PLANT DETAIL

Source: The Habitat Restoration Group

# EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES



Source: Essex Environmental

## Installation Requirements:

1. Prepare soil before installing including application of soil amendments (if required) and seed.
2. Begin at the top of the slope by anchoring the blanket in a 6" deep by 6" wide trench. Backfill and compact the trench after stapling.
3. Roll the blankets down the slope in the opposite direction of the water flow.

## Maintenance Requirements:

1. Inspect monthly and repair as necessary.

Figure 16  
EROSION CONTROL FABRIC  
INSTALLATION

# **EROSION CONTROL, SEDIMENTATION AND RESTORATION PLAN GUIDELINES**

## **Attachment A**

*A final construction list will be provided prior to construction that lists the locations where sensitive resources need to be avoided.*